The CubeSat Laser Intersatellite CrosslinK (CLICK)

Active Technology Project (2017 - 2023)

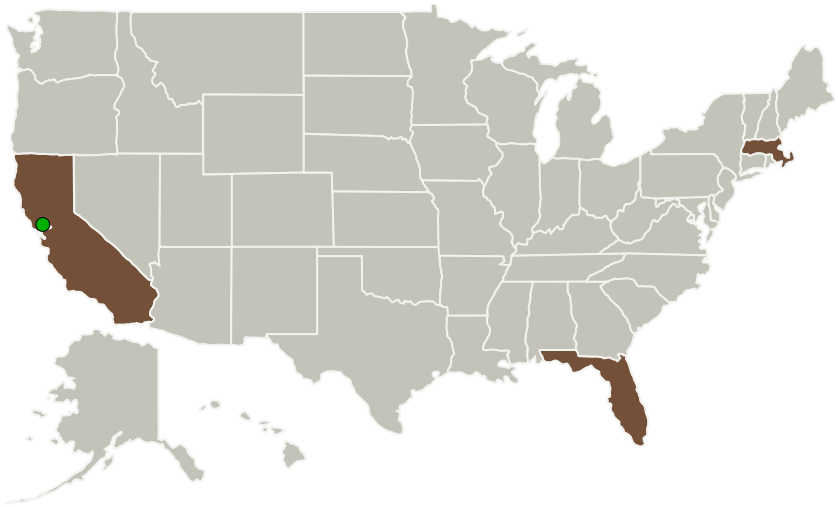
Project Introduction

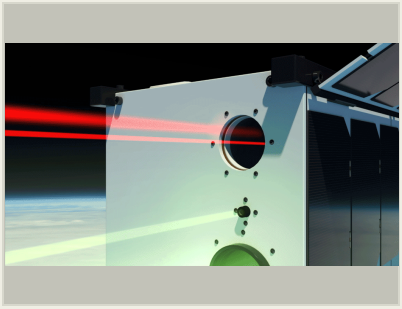
The CubeSat Laser Intersatellite CrosslinK (CLICK) project will advance state of the art in free space optical communications by demonstrating infrared laser crosslinks between two spacecraft using low-cost miniaturized optical transceivers build primarily of commercial components. Improved crosslink communication data rates for CubeSats will enable future missions that involve constellations or swarms of affordable small spacecraft for distributed missions.

Anticipated Benefits

CLICK will demonstrate a low-cost, low-complexity laser communications terminal that can be used in nanosatellite missions that involve constellations or swarms needing to transfer high data rates from node to node or from daughter-spacecraft to mother-spacecraft. This technology could help enable constellations of nanosatellites to network with one another to precisely correlate observations and to coordinate spacecraft flying in formation to produce a distributed aperture.

Primary U.S. Work Locations and Key Partners





A rendering of the laser crosslink.

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Organizations Performing Work	Role	Type	Location
Massachusetts Institute of Technology(MIT)	Lead Organization	Academia	Cambridge, Massachusetts
Air Force Research Laboratory(AFRL)	Supporting Organization	US Government	Notre Dame, Indiana
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
University of Florida	Supporting Organization	Academia	Gainesville, Florida

Primary U.S. Work Locations	
California	Florida
Massachusetts	

Project Transitions

September 2017: Project Start

April 2023: Closed out

Closeout Summary: CLICK A LRD 3/2020; CLICK B/C LRD 2021 Demonstratio n of in-space laser x-link. CLICK A LRD 3/2020; CLICK B/C LRD 2021

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Massachusetts Institute of Technology (MIT)

Responsible Program:

Small Spacecraft Technology

Project Management

Program Director:

Christopher E Baker

Program Manager:

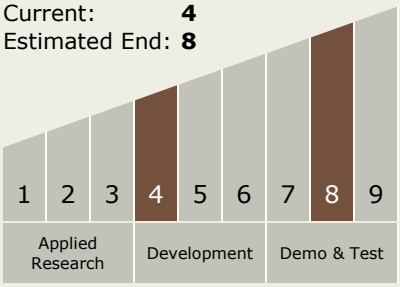
Roger Hunter

Principal Investigator:

Kerri Cahoy

Technology Maturity (TRL)

Start: **4**
Current: **4**
Estimated End: **8**



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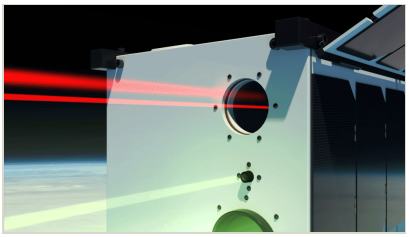
Images



CubeSat Laser Infrared CrosslinK
A rendering of the laser crosslink.
(https://techport.nasa.gov/image/102868)

Links

CLICK Project Page
(https://www.nasa.gov/directorates/spacetech/small_spacecraft/cubesat_laser_infrared_crosslink/)

Project Website:

https://www.nasa.gov/directorates/spacetech/small_spacecraft/cubesat_laser_

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems

Target Destinations

Earth, The Moon, Others Inside the Solar System